Non-Technical Abstract

The incidence of melanoma in the general population has risen at a rate exceeding that of any other malignancy except lung cancer in women. By the year 2000, 1 in 90 individuals is projected to develop this often fatal form of skin cancer. New forms of treatment are needed. For most types of cancer, stimulation of the patient's immune system is without apparent benefit. The tumor cells are resistant to the immune system. In melanoma, however, objective evidence indicates that the immune system, properly stimulated, can recognize and destroy the cancer cells. Although not likely to be curative, this form of therapy might become an adjunct to surgery, X-ray and chemotherapy, the conventional forms of treatment. This proposal describes a means of modifying characterized human melanoma cells maintained in the laboratory. The modifications are expected to increase their capacity to stimulate an anti melanoma immune response in melanoma patients. The modifications are carried-out by infecting the cells with a defective virus that carries a gene for interleukin-2, a natural hormone of the immune system. The infected cells incorporate the gene and secrete the hormone. Before injecting patients, the modified cells will be subjected to high doses of X-irradiation (5000 rads) to ensure that they cannot grow in the patient. Extensive testing will be performed beforehand to be certain that the cells do not carry bacteria or viruses that might be harmful. The period of survival of mice with melanoma treated with in an analogous manner was prolonged relative to that of untreated mice, although tumor growth recurred and the animals eventually died of their disease.